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JP 3134567 B2

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CLAIMS

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(57) [Claim(s)]

[Claim 1] The manufacturing method of a disposable diaper with the pocket structure characterized by the bird clapper from the process of the following A-F.

A: The process which lets out the backseat which is broader than completion product width of face, and has permeability, the watertight sheet of liquid impermeability with width of face narrower than the aforementioned backseat, and the hydrophobic surface sheet which has the width of face which is equivalent to the variation of tolerance of the cross direction of the aforementioned backseat and a watertight sheet at least from each winding.

B: The process which pastes up the absorptivity axis which piled up mutually the aforementioned liquid impermeability watertight sheet and the backseat which has permeability on the longitudinal direction axis, and pasted up, and covered the upper front face with liquid permeability facing on the watertight sheet of liquid impermeability at the predetermined intervals along with the aforementioned axis.

C: The process which distributes the surface sheet of the aforementioned hydrophobic property to right and left, sticks and puts it on the both-sides section of the aforementioned absorptivity axis so that it may lap on the aforementioned backseat, and pastes up mostly the flexible elastic body for crotch gathers formation, and the flexible elastic body for pocket gathers formation on parallel along with the longitudinal direction axis of a sheet in the state of extension between both the sheet.

D: The process which carries out a trimming cut and forms \*\*\*\*\* of a diaper so that the trimming cut of the aforementioned surface sheet and backseat which have been stuck and piled up may be carried out between the aforementioned flexible elastic body for crotch gathers formation, and the flexible elastic body for pocket gathers formation and the cutting plane line may make an about S character configuration.

E: The process which can shift a 1-/two-cycle phase to the main part of a sheet excluding the handle part in both the handle parts by which trimming was carried out, is fixed on an absorber so that \*\*\*\*\* movement may be carried out and it may lap with a hydrophobic surface sheet in the center section of bonito Mutsu, and forms a pocket.

F: The process which cuts between the absorbers which adjoin along with the line which intersects perpendicularly with the longitudinal direction axis of the aforementioned web material.

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## DETAILED DESCRIPTION

### [Detailed Description of the Invention]

#### [0001]

[Industrial Application] When this invention is described in more detail about a disposable diaper with pocket structure, it gives permeability, applying it to a crotch gathers portion from the side flap of a diaper, and relates to the manufacture method of a disposable diaper with the pocket structure which made the touch at the time of wearing good.

#### [0002]

[Description of the Prior Art] Many proposals are made about the urine leakage preventive measures of a disposable diaper until now, and the example is indicated by JP,62-250201,A etc. The above-mentioned disposable diaper is a disposable diaper with the member which the absorptivity heart is arranged between TOPPUSHI-TO of liquid permeability, and the backseat of liquid impermeability, and is called the gasket cuffs and barrier cuffs of elastic shrinkage characteristics to the side edge of TOPPUSHI-TO. Double solid gathers (obstruction) are made to form in this conventional diaper by sticking the barrier cuffs of the elastic shrinkage characteristics of a lot already which is another object inside the elastic shrinkage-characteristics gasket cuffs of the right and left by which gathers \*\*\*\* was carried out. This thing devised Homo sapiens's excrement so that restricted maintenance might be carried out with the barrier cuffs which rose to the aforementioned inside and it might not exceed in the outside, and it meant decreasing or delaying exsorption of excrement by the aforementioned double solid gathers.

[0003] However, the urine absorbed by the absorptivity heart diffuses the above-mentioned diaper, and it has the fault of leaking [ permeate it and ] and coming from the edge of TOPPUSHI-TO to a belly or back side. Moreover, after urination, in order that hydrophilic TOPPUSHI-TO may contact the skin widely with BETTARI, it closes to a wearer and a feeling of \*\* and displeasure are felt. Thus, the conventional disposable diaper is still inadequate in [ of the skin closing and abolishing a feeling of \*\*, and displeasure ] that the point and diaper which prevent the leakage of excrement are contacted.

[0004] Moreover, in the case of manufacture processing, the above-mentioned conventional diaper rises by the elastic ERASU tic member which attached gasket cuffs and barrier cuffs in each of that edge section, and forms solid gathers. Therefore, in order to attach an elastic ERASU tic member in the above-mentioned cuffs, each cuffs edge was turned up, the aforementioned elastic ERASU tic member needed to be confined in the shape of a tunnel inside nothing and its tunnel at the extension state, and adhesion fixation needed to be carried out. Clinch operation of this cuffs edge and the operation which confines an elastic ERASU tic member in an extension state at the aforementioned edge, and carries out adhesion fixation require time and effort, since it is complicated operation mechanically, it serves as a serious obstacle on processing processing, and smooth operation cannot accomplish it. Since the time and effort which already sticks the barrier cuffs of a couple inside the gasket cuffs of about it and the above-mentioned couple is taken, there is a fault that manufacture efficiency is bad, also at this point.

[0005] In order to solve such a fault, this invention persons proposed the disposable diaper which has the pocket structure of the following structures previously (refer to Japanese Patent Application No. No.

272841 [ 02 to ]). Namely, it sets to the disposable diaper with which the absorptivity axis has been arranged between a surface sheet and a rear-face sheet. It constitutes from a sheet of two or more sheets of the hydrophobic sheet which is attached on the hydrophilic sheet which attaches the aforementioned surface sheet in this axis upper surface by the almost same length as an absorptivity axis, and the aforementioned hydrophilic sheet, and covers the aforementioned absorptivity axis upper surface. and the central field of the aforementioned hydrophobic sheet -- the pocket for an excrement chute lump -- while preparing a hole -- the aforementioned pocket -- the both sides of a hole -- this pocket -- the flexible elastic body which gives a shrinkage force attaches in the direction which punctures a hole [0006] As a rear-face sheet (it may be called a watertight sheet), it is used so that a wearer's clothes may not be soiled, the material, for example, the polyethylene film, of liquid impermeability.

[0007]

[Problem(s) to be Solved by the Invention] Since it is necessary to make it a hole not open during manufacture of a diaper, therefore a thing thin from a strong point cannot be used for the aforementioned rear-face sheet, generally the polyethylene film with a thickness of about 20-30micro is used. If it is in the diaper using such a film, the film itself gives hardness to a product and, moreover, it emits sound called GASAGASA at the time of diaper wearing. Therefore, at the time of diaper exchange of night, sleep may be barred to sound, and, on the other hand, there is displeasure at the time of a walk. Moreover, this rear-face sheet made from polyethylene gives a cold different feel from cloth to a wearer's skin, when infants have been embraced. And since it is easy to produce \*\*\*\* at the time of diaper wearing, displeasure is felt.

[0008] Moreover, usually, although a diaper needs to trim a side flap portion toward the inside and needs to form \*\*\*\*\* in order to raise the fit nature between a wearing person's feet, it has the difficulty which a material loss generates in the process.

[0009] It aims at obtaining the disposable diaper which has the new pocket structure which makes the touch good while this invention solves the trouble of the above disposable diapers and mitigating \*\*\* at the time of wear in here, and can use a thin soft watertight sheet.

[0010] Moreover, at the time of diaper manufacture, a manufacturing process is elaborated and this invention aims at proposing the manufacturing method of the disposable diaper which has the new pocket structure which can make the material loss after carrying out a trimming cut there be nothing so that the material which carried out the trimming cut can be used as a member for pocket structure formation.

[0011]

[Means for Solving the Problem] Namely, the place by which it is characterized [ of this invention slack diaper ] Adhesion fixation of the axis of absorptivity is carried out between the watertight sheet of liquid impermeability, and liquid permeability facing. And it is the disposable diaper on which the hydrophobic surface sheet was stuck and put so that a pocket might be made to form on the aforementioned liquid permeability facing. It is broader than this watertight sheet to the outer layer of the watertight sheet of the aforementioned liquid impermeability, and a backseat with permeability is arranged in it. While sticking a surface sheet hydrophobic in preparation for the inner layer of the longitudinal direction both-sides section of the aforementioned backseat in permeability, respectively and forming the side flap section in piles Between the aforementioned surface sheet and a backseat, the flexible elastic body for crotch gathers formation, Paste up in parallel with the longitudinal direction axis of a sheet in the state of extension, and the flexible elastic body for pocket gathers formation is prepared. Moreover, the aforementioned surface sheet and backseat which have been stuck and piled up are set between the aforementioned flexible elastic body for crotch gathers formation, and the flexible elastic body for pocket gathers formation. both the handle parts by which the trimming cut was carried out and the trimming cut was carried out so that a cutting plane line might make the shape of serpentine -- pocket formation -- it is in having fixed on the axis of absorptivity so that it might consider as a member and might lap on the aforementioned surface sheet

[0012] Moreover, the manufacturing method of the disposable diaper which has the pocket structure which this invention proposes The backseat which is broader than completion product width of face, and

has permeability, and the watertight sheet of liquid impermeability with width of face narrower than the aforementioned backseat, The process which lets out the hydrophobic surface sheet which has the width of face which is equivalent to the variation of tolerance of the cross direction of the aforementioned backseat and a watertight sheet at least from each winding, Pile up mutually the aforementioned liquid impermeability watertight sheet and the backseat which has permeability on a longitudinal direction axis, and it pastes up. And the process which pastes up the absorptivity axis which covered the upper front face with liquid permeability facing at the predetermined intervals along with the aforementioned axis on the watertight sheet of liquid impermeability, The surface sheet of the aforementioned hydrophobic property is distributed to right and left, and is stuck and put on the both-sides section of the aforementioned absorptivity axis so that it may lap on the aforementioned backseat. between both the sheet The flexible elastic body for crotch gathers formation, The process which pastes up mostly the flexible elastic body for pocket gathers formation on parallel along with the longitudinal direction axis of a sheet in the state of extension, The trimming cut of the aforementioned surface sheet and backseat which have been stuck and piled up is carried out between the aforementioned flexible elastic body for crotch gathers formation, and the flexible elastic body for pocket gathers formation. And the process which carries out a trimming cut and forms \*\*\*\*\* of a diaper so that the cutting plane line may make an about S character configuration, The process which can shift a 1-/two-cycle phase to the main part of a sheet except the handle part by which the trimming cut was carried out, is fixed on an absorber so that \*\*\*\*\* movement may be carried out and it may lap with a hydrophobic surface sheet in the center section of bonito Mutsu, and forms a pocket, It is characterized by the bird clapper from the process which cuts between the absorbers which adjoin along with the line which intersects perpendicularly with the longitudinal direction axis of the aforementioned sheet.

[0013] The side flap of this invention diaper is constituted as mentioned above by sticking and piling up a surface sheet hydrophobic in preparation for the inner layer of the right-and-left both-sides section of the backseat protruded from the right-and-left both sides of a watertight sheet in permeability. And the appearance configuration of \*\*\*\*\* of this product is formed by carrying out a trimming cut by the shape of serpentine [ which continued the portion of the aforementioned side flap ]. And pocket structure can shift a 1-/two-cycle phase to the main part of a sheet except the handle part which is the member left behind after the trimming cut was carried out as mentioned above, and is formed again by carrying out \*\*\*\*\* movement and fixing to the center section of bonito Mutsu on an absorber.

[0014]

[Function] Since it consists of two-layer composites with [ diaper / of this invention constituted as mentioned above ] permeability in the portion of a side flap, \*\*\*\* at the time of wear is reduced. Moreover, it is broader than this watertight sheet, and since the backseat with permeability was arranged, the diaper which can protect a watertight sheet, can use a thin soft watertight sheet, and can prevent a trouble which makes a hole into a manufacturing process at a watertight sheet, and does not emit GASAGASA sound at the time of wearing is obtained in the outer layer of the watertight sheet of the liquid impermeability used by this invention. Moreover, according to the manufacturing method of this invention, the material loss generated in the trimming cut of \*\*\*\*\* is lost, and the material which carried out the trimming cut can be used as it is as a member for pocket structure formation.

[0015]

[Example] The diaper of this invention is explained based on a drawing. Explanatory drawing and drawing 2 which show the manufacturing method of the diaper according [ drawing 1 ] to this invention are the plan having shown the state where the state and the material which carried out the trimming cut of the trimming cut in the middle of manufacture of this invention diaper were fixed on the axis of absorptivity as a member for pocket structure formation. Moreover, the cross section with which drawing 3 met the A-A line in drawing 2 , and drawing 4 show the package of this invention diaper.

[0016] Each part of a diaper is explained in detail below. A sign 1 shows rear-face material and constitutes this rear-face material from two-layer [ of the backseat 2 which has permeability, and the watertight sheet 3 of liquid impermeability with width of face narrower than the aforementioned backseat ]. The backseat 2 with permeability is arranged in the outer layer of this watertight sheet 3. 4 is

liquid permeability facing and is making the axis 5 of the absorptivity of small area infix rather than any of a watertight sheet and liquid permeability facing between this liquid permeability facing 4 and the watertight sheet 3 of liquid impermeability. Like illustration, the upper surface of an axis 5 is being worn by liquid permeability facing, and the watertight sheet 3 is arranged by this composition at the lower layer of an axis 5. In addition, the watertight sheet 3 is greatly formed a little in the cross direction rather than the liquid permeability facing 4.

[0017] The inner layer (above) of the longitudinal direction both-sides section of the backseat 2 equipped with permeability is equipped with the permeability of two sheets, and the hydrophobic surface sheets 6 and 6 are stuck on it, and the side flap sections 7 and 7 are formed in it in piles. And between the surface sheets 6 and backseats 2 which constitute this side flap section, it pastes up in parallel with the longitudinal direction axis of a sheet in the state of extension, and the flexible elastic body 8 for crotch gathers formation and the flexible elastic body 9 for pocket gathers formation are infix. In addition, the position of crotch gathers may be arranged so that it may come on a watertight sheet, and you may arrange it between the sheet 6 which has permeability like this example, and 2. When it arranges between the sheet 6 with permeability, and 2, since gathers are finished soft, they are desirable. In addition, what has the backseat 2 broader than the completion product width of face of a diaper shown in drawing 1 is used. Moreover, the width of face of the surface sheets 6 and 6 of two sheets is made to form in the width of face which is equivalent to the variation of tolerance of the cross direction of the aforementioned backseat 2 and a watertight sheet 3 at least.

[0018] The backseat which is broader than completion product width of face, and incidentally has permeability by the manufacturing method of the diaper of this invention, After sending out the watertight sheet of liquid impermeability with width of face narrower than the aforementioned backseat, and the hydrophobic surface sheet which has the width of face which is equivalent to the variation of tolerance of the cross direction of the aforementioned backseat and a watertight sheet at least from each winding, The absorptivity axis which piled up mutually the aforementioned liquid impermeability watertight sheet and the backseat which has permeability on the longitudinal direction axis, and pasted up, and covered the upper front face with liquid permeability facing on the watertight sheet of liquid impermeability is intermittently pasted up at the predetermined intervals along with the aforementioned axis. And as shown in the example of illustration, after carrying out the hydrophobic sheet of one sheet in the center for 2 minutes and distributing to right and left, it sticks and nothing and the side edge section of another side are piled up so that it may be in agreement with the both ends of a backseat 2 so that one side edge section of the cross direction may be stuck on the liquid permeability facing 4 of the upper surface of an axis and may be piled up. In addition, as for the material currently used in this example, that by which product width of face pasted up the watertight sheet of 200mm width of face on the backseat of 400mm width of face to what is 320mm is used. Moreover, on a watertight sheet, the axis 5 of absorptivity with a width of face [ of 140mm ] and a length of 380mm is intermittently arranged in the length direction of a sheet, and the upper surface of an axis 5 is being worn by liquid permeability facing with a width of face [ of 152mm ], and a length of 380mm. Moreover, a thing with a width of face of 300mm is used, and a hydrophobic surface sheet carries out the slit of the center section, carries out it for 2 minutes, it is distributed to right and left and developed.

[0019] as show in drawing 2 , by put in slitting which make an about S character configuration or a wave type for the side flap section 7 which stuck the aforementioned surface sheet 6 and the backseat 2 , and be formed in piles between the aforementioned flexible elastic body 8 for crotch gathers formation , and the flexible elastic body 9 for pocket gathers formation , the appearance configuration of \*\*\*\*\* 10 of a diaper carry out a trimming cut ( the cutting plane line may be call below S character cut line 11 ) , and be form .

[0020] Both the handle parts 12 and 12 that are the members of the outside of the left-behind S character cut line 11 after a trimming cut is carried out are pasted up after being able to shift a 1-/two-cycle phase to the main part of a sheet except the handle part so that it may lap on the aforementioned surface sheet as a pocket formation member, and \*\*\*\*\* (ing) in the center section of the main part. Thus, if the cut handle part material is shifted and it pastes up, the material loss generated in the trimming cut of \*\*\*\*\*

will be lost, and the material which carried out the trimming cut can be used as it is as a member for pocket structure formation. In addition, the method of shifting handle part material as mentioned above, and pasting up can be easily attained by adopting a detour means to form a time lag to the flow of a sheet, as the production line of a diaper shows to drawing 5.

[0021] In namely, the process which carries out the trimming cut of the both-sides section of a sheet, and makes the appearance configuration of a product while letting out each material sheet of a diaper in the length direction So that it may be late for time until the main part of a sheet except the handle part similarly comes out of a slitter 13 and time until the member by which the trimming cut was carried out comes out of a slitter 13 and reaches the adhesion roller 15 reaches the adhesion roller 15 fixed time A guide idler 14 is arranged in the conveyance mainline upper part, and the detour line for time-lag formation is formed. A fixed time lag means the phase lag of a 1-/two cycle to the main part of a sheet here. And the handle part 12 trimmed as a pocket formation member is pulled up so that a handle part may pass through this guide-idler 14 top, and \*\*\*\*\* movement of this is further carried out in the center section of the diaper. And on the surface sheet 6, adhesion fixation of both the handle parts on either side is carried out so that longitudinal direction ends may moreover lap in part mutually on the axis 5 of absorptivity. The place shown in drawing 2 with the slash here is a hot-melt-adhesive part. By fixing with a such means, the pocket hole 16 for an excrement chute lump will be formed in the central field of the axis 5 of the aforementioned absorptivity, and, as for the pocket hole of a parenthesis, the flexible elastic body 9 for pocket gathers formation will be arranged in both sides.

[0022] If pocket structure is formed as mentioned above, the finished product shown in drawing 4 will be obtained by cutting between the absorbers which next adjoin each material sheet of a diaper along with the line which intersects perpendicularly with the longitudinal direction axis.

[0023] Incidentally the pocket opening width of face H can be suitably set up by adjusting the lap width of face T of the adhesion position to the depth size set point and the surface sheet 6 of \*\*\*\*\* by the S character cut line, and both the handle parts 12 and 12. Although the surface sheet 6 and a backseat 2 stick the thing of an example, it cuts deeply toward both sides from the center of a pile and \*\*\*\*\* is formed at the angle of about 40 degrees, this slitting angle and depth can be set up suitably as mentioned above. Moreover, as for the lap width of face of both handle parts, it is good to arrange so that it may lap with about 5-20mm.

[0024] The layered product to which the absorptivity axis 5 used by this invention has arranged absorptivity sheets, such as tissue paper and a dry type pulp nonwoven fabric, to the vertical side is used, and it consists of two-layer [ of absorptivity fiber layers, such as flap pulp and rayon, ], or a multilayer beyond it between up-and-down absorptivity sheets. Moreover, a high absorptivity granular object can also be arranged between each class of an absorptivity core. A high absorptivity granular object here says the granular object which mixed activated carbon, carboxymethyl-cellulose, the zeolite, etc. to the high absorptivity polymer particle independent or this which is usually known. Although the configuration of the absorptivity axis in this example is mostly formed in the shape of a rectangle, it may be carrying out that to which the flat-surface configuration carried out the about I character type as a whole, i.e., the shape of a sandglass in which the center was narrow.

[0025] moreover -- as the backseat 2 which has the permeability used for this invention -- the hydrophobic processing material of a polypropylene melt BURON nonwoven fabric and a polypropylene point embossing SAMARUBONDO nonwoven fabric, and a hole -- an aperture film can be used Moreover, as a watertight sheet 3 of liquid impermeability, a polyethylene film and a moisture permeation film are usable. In addition, as facing 4 of liquid permeability which covers with the upper surface of an absorptivity axis, the hydrophilic processing material of a hot-air through thermal bond nonwoven fabric and a polypropylene point embossing SAMARUBONDO nonwoven fabric is used. Moreover, the hydrophobic surface sheet 6 which constitutes the side flap section can use the hydrophobic processing material of a polypropylene span bond nonwoven fabric.

[0026] Moreover, as for the flexible elastic body 8 for crotch gathers formation, and the flexible elastic body 9 for pocket gathers formation, the thing of the shape of thread, such as nature or composite rubber, and urethane, a string, and a band is used.

[0027]

[Effect of the Invention] Since this invention is constituted as mentioned above and the portion of a side flap consists of two-layer composites with permeability, \*\*\*\* at the time of wear is reduced. Moreover, in the outer layer of the watertight sheet of the liquid impermeability used by this invention, it is broader than this watertight sheet, and is effective in the diaper which can use a thin soft watertight sheet since the backseat with permeability was arranged, protects a watertight sheet in a manufacturing process, and can prevent a trouble which makes a hole at this, and does not emit GASAGASA sound at the time of wearing being obtained. Moreover, according to the manufacturing method of this invention, the material loss generated in the trimming cut of \*\*\*\*\* is lost, and it has \*\*\*\*\* immediately on industry in that the material which carried out the trimming cut can be used as it is as a member for pocket structure formation.

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## DESCRIPTION OF DRAWINGS

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[Brief Description of the Drawings]

[Drawing 1] It is explanatory drawing showing the manufacturing method of the diaper by this invention.

[Drawing 2] It is the plan having shown the state in the middle of manufacture of a diaper same as the above.

[Drawing 3] It is the cross section which met the A-A line in drawing 2 .

[Drawing 4] It is the plan having shown the package of this invention diaper.

[Drawing 5] It is explanatory drawing of a detour means.

[Description of Notations]

1 Rear-Face Material

2 Backseat

3 Watertight Sheet

4 Liquid Permeability Facing

5 Absorptivity Axis

6 Surface Sheet

7 Side Flap Section

8 Flexible Elastic Body for Crotch Gathers Formation

9 Flexible Elastic Body for Pocket Gathers Formation

10 \*\*\*\*\*

11 S Character Cut Line

12 Handle Part

13 Slitter

14 Guide Idler

15 Adhesion Roller

16 Pocket Hole

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[Translation done.]

## \* NOTICES \*

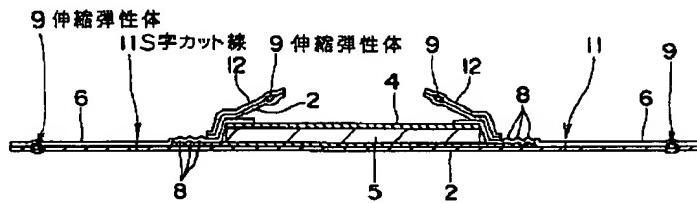
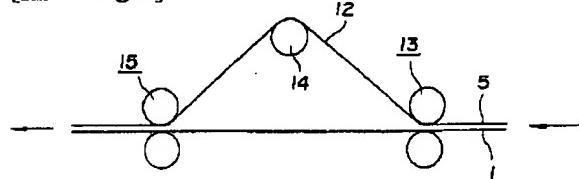
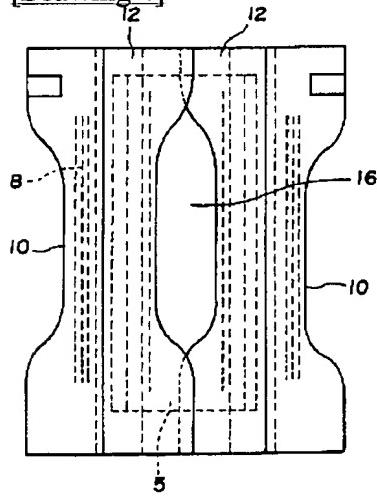
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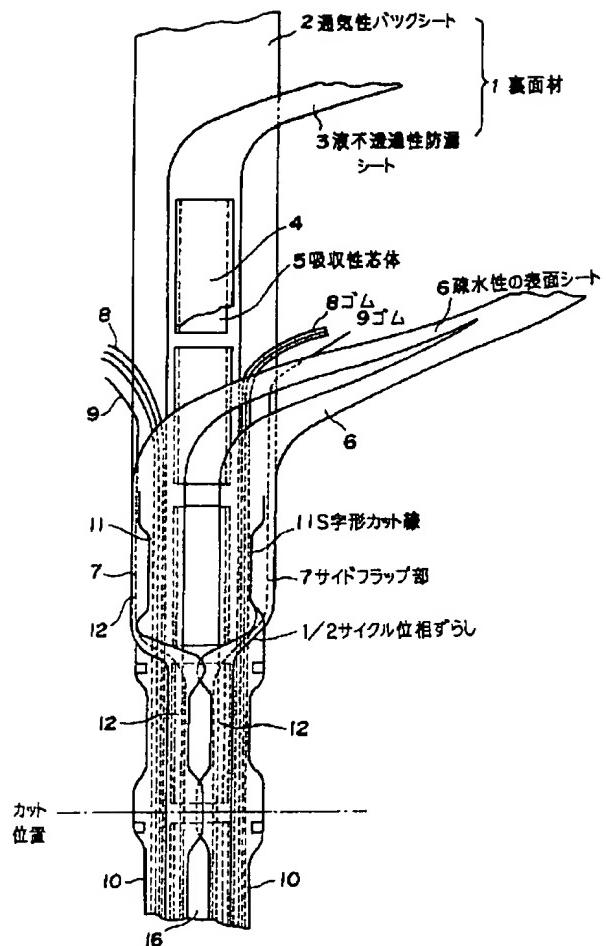
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## DRAWINGS

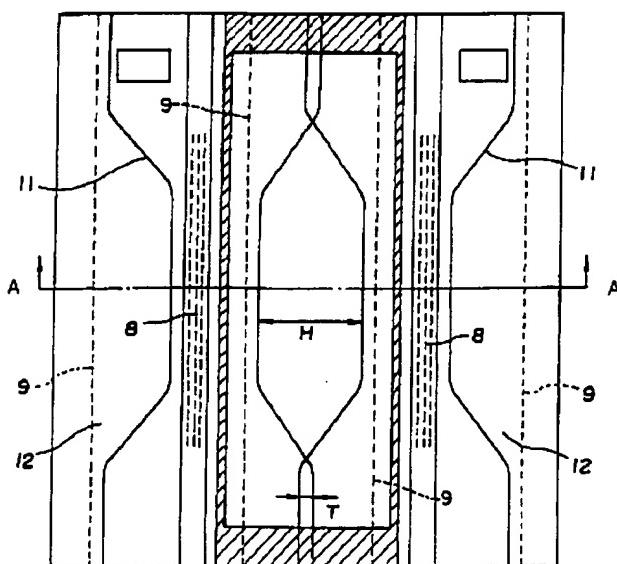
[Drawing 3]

A-A 断面図

[Drawing 5][Drawing 4][Drawing 1]



[Drawing 2]



[Translation done.]